

REMARKS

Claims 1-16 are pending in the application. All pending claims are rejected.

Claims 1, 7 and 9 are amended as presented above. Claim 16 has been cancelled.

Interview

Applicant greatly appreciates the in-person interview with the Examiner, and thanks the Examiner for his helpful comments.

Claim Rejections under 35 U.S.C. § 103

In paragraph 3 of the Office Action, claims 1-5 and 7-13 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Bremer (United States Patent No. 5,042,462) in view of Spetzler (United States Patent No. 5,669,912). This rejection is respectfully traversed. The Examiner states that Bremer discloses Applicant's claimed invention except the pin tip having a radius in the range of .025 to .075 mm, but that Spetzler discloses a radius in this range.

Most significantly, there is no motivation to combine any of the references cited by the Examiner in his October 24, 2003 Office Action to create that which is claimed by Applicant because the cited references teach away from using insulating material such as ceramic for skull pins, or emphasize use of very different materials such as titanium and steel. Ceramic is far more brittle than any of the materials mentioned in the cited references, and thus creates a challenge to its use for skull pins. As a brittle material, ceramic is not perceived as having the strength of materials traditionally used for skull pins. Spetzler provides that suitable materials are steel and titanium (col. 2, lines 64-65). Iverson goes as far as to state, "The skull pins developed to solve this problem [heating of skull pins during MRI] have been constructed with either a ceramic tip or an entire ceramic body. The ceramic material has been found to be prone to breakage because of its inherently brittle composition." (col. 1, lines 47-51). Bremer

states that there are no known plastics (another insulating material) that effectively penetrate the skin and engage the outer table of the bone without deformation or breaking (col. 3, lines 56-62).

Bremer 5, 042, 462 uses plastic skull pins with a ceramic tip, but states that the ceramic tip is not a CT transparent material, which is a draw back to ceramic (col. 3, lines 59-62). Accordingly, Bremer teaches away from Applicant's claimed invention, and Bremer is not analogous art.

Neither Bremer nor Speztler address the problem of conductivity of the energy generated by MRI imaging, and therefore, one would not be motivated to combine these references to develop Applicant's claimed invention. Bremer attempts to solve the problem of CT transparency, not conductivity. Iverson addresses the conductivity problem, but specifically states that ceramic pins are too brittle to solve the problem, teaching away from Applicant's claimed invention and evidencing failure by others in using insulating materials such as ceramic. Iverson addresses the conductivity problem by providing a strong pin core, such as titanium (col. 3, lines 47-48), coated with a nonconductive material such as a polymer or ceramic. Thus, it is not obvious to combine teachings related to coated metals to use of insulating materials. There is clearly no suggestion in the prior art of the desirability of the combination of the teachings of these references. Motivation to combine references requires desirability (Winner Int'l Royalty Corp. v. Wang, 202 F.3d 1340, 53 USPQ2d 1580, 1587 (Fed. Cir.), cert. denied, 530 U.S. 1238 (2000)). There is nothing in the prior art to suggest that use of insulating materials as Applicant claims is desirable.

It is agreed that Speztler teaches a skull pin of diameter of approximately .1 mm (i.e., a radius of .050 mm) as the Examiner provides, however, Speztler's disclosed radius is not analogous to Applicant's claimed radius. Speztler describes diameters of various portions of the

pin, each of which is a cross-sectional diameter, whereas Applicant's claimed radius is that of the curvature of the pin tip. Exhibit A is provided to show Applicant's radius, and Exhibit B to show Spetzler's radius. Applicant's radius, as shown in Exhibit A, is that of the curvature of the rounded pin tip. Spetzler's pin comes to a "sharp point" (col. 3, line 57), and therefore, there is no measurable curvature as there is with Applicant's pin tip, or at least not one in Applicant's claimed range. Therefore, Spetzler's cross-sectional radius, even if taken very close to the pin tip end, is not representative of the sharpness or roundness of the pin tip. For Spetzler's pin tip to be a sharp point, as Spetzler describes it, there must necessarily be portion of the pin tip extending past where the pin tip cross-section is taken.

There is support in Spetzler's specification that the diameter referred to is the cross-sectional diameter. In col. 3, lines 5-12, Spetzler describes the taper of the pin. The taper is described as a change in diameter per millimeter of length. Only the diameter of the cross-section changes over the length of the pin, evidencing that the diameter disclosed is not of the curvature of the pin tip. In column 3, lines 19-26, Spetzler continues to discuss the diameter of various components, further supporting that the use of the term "diameter" is that of the cross-section of the pin. For example, the diameters of collar 20 and shanks 15 and 16 are described. Parts 15, 16 and 20 are cylinders so that the diameter described must be that of the cross-section, as there is no curved tip on these parts.

Applicant's description of the radius on page 7, lines 18-22 clearly indicates that the radius is of the curvature of the rounded tip. Applicant has amended claim 1 to clarify of what dimension the radius is. This amendment is for clarification only and does not change the scope of the claimed dimension.

Accordingly, Applicant's claimed radius is not disclosed by Spetzler. Withdrawal of the rejection of 1-5 and 7-13, as being unpatentable over Bremer in view of Spetzler is therefore, respectfully requested.

In paragraph 4 of the Office Action claims 6, 14 and 15 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Bremer (United States Patent No. 5,042,462) in view of Spetzler (United States Patent No. 5,669,912), and further in view of Iversen (United States Patent No. 6,045,553). The Examiner provides that Iversen discloses a pin tip with an angle of 40° (fig. 6 and col. 4, lines 40-44). Applicant respectfully traversed this rejection. As claims 6, 14 and 15 depend on independent claims overcome the prior art so do these dependent claims.

Claim 16 has been cancelled so the rejection of this claim is not addressed.

Response to Amendment

The Examiner states that, ""Pointed" is a relative term referring to the radial narrowness of the pin tip or tapered portion with respect to the rest of the pin. The Examiner provides no support for his definition of "pointed." The Examiner also states that, "the pin tip of Bremer's pin is "pointed" and rounded..." This is in contradiction to the Examiner's previous statement that, "Bremer, however, does not disclose a rounded tip." (1/15/03 Office Action, page 3, 5th full paragraph). Even if "pointed" is a relative term and describes the tapered portion with respect to the rest of the pin, the cited patents are directed to skull pins, and therefore, the tips are compared to similarly-dimensioned pin portions, so if Bremer does not disclose a rounded tip then it does not disclose Applicant's claimed invention.

With reference to Exhibit A of Applicant's previous response, the Examiner states that the angle cannot be gleaned from the figure. The Examiner, however, cited only the figure

as disclosing Applicant's claimed angle, and nothing in the description. Therefore, Applicant's Exhibit was to emphasize that Bremer does not disclose Applicant's angle anywhere in the patent, including the description and the drawing.

Declaration

The Examiner notes that the Declaration filed July 17, 2003 is insufficient to overcome the rejection of claims 1-16 because it declares the efficacy of the claimed range of angles but does not negate other angles disclosed by the prior art, where other angles are also shown to be effective. Applicant's July 17, 2003 Declaration addresses the radius of curvature and not the claimed angles. Assuming that the Examiner intended to comment on the radius of curvature and not the angle, Applicant has provided a Supplemental Declaration that describes experimental results that show that radii outside the claimed range are not effective for use as skull pins.

As this addresses all outstanding issues, Applicant believes that the invention as set forth in the amended claims is patentable over the cited prior art, and respectfully requests early and favorable notification to that effect.

Respectfully submitted,
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Dated: 2/24/04

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